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Quaternary Fault and Fold Database of the United States

As of January 12, 2017, the USGS maintains a limited number of metadata fields that characterize the Quaternary faults and folds of the United States. For the most up-to-date information, please refer to the interactive fault map.

Topliff Hill fault zone (Class A) No. 2407

Last Review Date: 1999-10-01

Compiled in cooperation with the Utah Geological Survey

citation for this record: **Black, B.D., and Hecker, S., compilers, 1999, Fault number 2407, Topliff Hill fault zone, in Quaternary fault and fold database of the United States: U.S. Geological Survey website, https://earthquakes.usgs.gov/hazards/qfaults, accessed 12/14/2020 02:55 PM.**

Synopsis	Poorly understood zone of late Quaternary faulting in southern Rush Valley. A faulted alluvial fan has been mapped as younger than the Bonneville shoreline (16.8 ka), and as wave etched and thus older than the shoreline. From scarp-profile data, the Topliff Hill scarps appear to be >16.8 ka, but younger than scarps on the Sheeprock [2405], Stansbury [2395], and Mercur [2399] faults.
Name comments	**Fault ID:** Refers to fault number 7-7 of Hecker (1993 #642).
County(s) and State(s)	TOOELE COUNTY, UTAH

Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:250,000 scale. *Comments:* Mapped or discussed by Everitt and Kaliser (1980 #4524) and Barnhard and Dodge (1988 #429). Fault traces from mapping of Moore and Sorensen (1979 #4512), Barnhard and Dodge (1988 #429), and unpublished 1989 UGS mapping by Hecker (scale 1:24,000; 1:62,500; 1:100,000).
Geologic setting	North-trending fault zone along the western side of the East Tintic Mountains in southern Rush Valley. The East Tintic Mountains show a relatively high proportion of igneous rocks and a complex internal structure. Surficial geology of Rush Valley is dominated by deposits of Pleistocene Lake Bonneville and alluvial-fan sediments.
Length (km)	20 km.
Average strike	N10°E
Sense of movement	Normal
Dip Direction	W
Paleoseismology studies	
Geomorphic expression	Discontinuous north-trending fault scarps on alluvium. Most of the fault zone is topographically above and parallel to the Bonneville shoreline. Scarps on old fan deposits are higher and more degraded than those on younger deposits, indicating recurrent movement. The scarps show a cumulative maximum displacement of 5.8 meters. South of the scarps, the range front rises in elevation, is linear and faceted, and has an active alluvial apron (Everitt and Kaliser, 1980 #4524).
Age of faulted surficial deposits	Late Pleistocene alluvium.
Historic earthquake	

Most recent prehistoric deformation	late Quaternary (<130 ka) *Comments:* Everitt and Kaliser (1980 #4524) interpreted a faulted alluvial fan as younger than the Bonneville shoreline, whereas Barnhard and Dodge (1988 #429) mapped the same surface as wave etched and older than the shoreline. From scarp-profile data, the Topliff Hill scarps appear to be younger than the Sheeprock [2405], Stansbury [2395], and Southern Oquirrh Mountains fault zone [2399] fault scarps, but older than the Bonneville highstand (>16.8 ka).
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* The ages of faulted deposits and scarps are uncertain; slip rate may be higher than 0.2 mm/yr but there are no data to substantiate this inferrence.
Date and Compiler(s)	1999 Bill D. Black, Utah Geological Survey Suzanne Hecker, U.S. Geological Survey
References	#429 Barnhard, T.P., and Dodge, R.L., 1988, Map of fault scarps formed on unconsolidated sediments, Tooele 1° x 2° quadrangle, northwestern Utah: U.S. Geological Survey Miscellaneous Field Studies Map MF-1990, 1 sheet, scale 1:250,000. #4524 Everitt, B.L., and B.N., K., 1980, Geology for assessment of seismic risk in the Tooele and Rush Valleys, Tooele County, Utah: Utah Geological and Mineral Survey Special Studies 51, 33 p. #642 Hecker, S., 1993, Quaternary tectonics of Utah with emphasis on earthquake-hazard characterization: Utah Geological Survey Bulletin 127, 157 p., 6 pls., scale 1:500,000. #4512 Moore, W.J., and Sorensen, M.L., 1979, Geologic map of the Tooele 1° x 2° quadrangle, Utah: U.S. Geological Survey Miscellaneous Investigations Map I-1132, scale 1:250,000.